



City of Alexandria

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COMMON 2009 VIRGINIA RESIDENTIAL CODE REQUIREMENTS

One- and Two-Family Dwellings

Updated July 2013

The scope of this handout and the Virginia Residential Code (VRC) is limited to detached one- and two-family dwellings not more than three stories in height with a separate means of egress and their accessory structures. All other structures are subject to the Virginia Construction Code (VCC).

This handout outlines pertinent code items required on plans and projects. Additional items may be required depending on the specific project. Remember that these guidelines are not substitutes for codes and regulations. You are responsible for ensuring that your project complies with the specific requirements of all relevant codes and regulations.

1. REQUIREMENTS ON PLANS

Reference: VRC 109.1; Screening and Submittal Checklist

- Plans must be signed and sealed by a registered design professional (RDP) licensed to practice in the Commonwealth of Virginia (one original plan set).
 - If they are responsible for the construction documents (regardless of if Virginia law requires the plans be prepared by an RDP; or
 - If it is required by the Code of VA Section 54.1-400, DPOR.
- Plans no larger than 24" x 36"
- House location plat
- A copy of the approved Site Plan or Grading Plan if associated with the proposed project.
- Foundation Plan
- Floor plans including labeled use of all rooms.
- Elevations
- Roof and floor framing plans including existing framing affected by additions and alterations.
- Building cross-section(s)
- Architectural/structural notes, as applicable
- Truss specifications and shop drawings, submittal and approval prior to installation

2. BUILDING SEPARATION REQUIREMENTS

Proximity to property line

Reference: VRC R302

- One-hour wall is required if less than 5' to property line. See VCC Table 702.1(2) for one-hour construction.
- No openings (doors and windows) in walls less than 3' to property line.
- 25 percent maximum openings between 3' and 5' to property line.

Eave overhangs

Reference: VRC R302.1 and VCC 704.2.3

- Eaves can extend no closer than 2' to property line.

- Eaves at 5' or less to property line must be finished on the underside with at least 5/8" Type X gypsum sheathing or equivalent (see VRC 302.1 Exceptions and VRC Table R302.1, footnote).
- Eave/soffit vents not allowed at 5' or less from a property line.

3. GARAGE AND CARPORT REQUIREMENTS

Reference: VRC R302.5 and Table R302.6

- 1/2" regular gypsum board (garage side) required at walls separating garage and dwelling.
- Garage ceilings where dwelling above requires 5/8" Type X gypsum board. Supporting structure requires 1/2" regular gypsum board.
- 1-3/8" thick (minimum) solid core or 20 minute door required between garage and dwelling (R302.5.1).
- No separation required at carports (two sides open).

4. SOUND TRANSMISSION CONTROL

Reference: VRC R327

- Applies to two-family dwellings or townhouses; for party wall or floor-ceiling assemblies.
- Floor-ceiling requires airborne sound insulation w/STC = 45 or more and impact sound insulation w/IIC = 50 or more.
- Party walls require airborne sound insulation w/STC = 45 or more.

5. LIFE SAFETY REQUIREMENTS

Stairs

Reference: VRC R311.7

- Minimum width is 36"
- Maximum 8 1/4" rise
- Minimum 9" run
- Minimum 6'8" head room
- Handrail 34"-38" above tread nosing
- Handrail grasping dimension 1-1/4" minimum - 2" maximum
- For winding stairs provide a minimum 7 1/2" tread at 12" from the narrowest edge and the rise shall be no more than 9 1/2" and minimum 6'6" head room.

Guardrails (Guards)*Reference: VRC R312*

- 36" high min. guard required for walking surfaces 30" above adjacent finished grade/floor below, measured at any point within 36" horizontally to the edge of the open side.
- Required guards shall not have openings from the walking surface to the required guard height which allow passage of a sphere 4" in diameter.

Carbon Monoxide Alarms*Reference: VRC R315*

- New Construction: Carbon monoxide alarm must be installed outside of each separate sleeping area(s) in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

Smoke Alarm*Reference: VRC R314*

- Smoke detectors are required when a permit is required, or when one or more bedrooms are added.
- Must be powered by interconnected building wiring, and have battery back-up in new construction and additions.
- May be battery-powered in alterations or repairs except when wiring can be installed without removal of interior finishes.
- Required in sleeping rooms, outside sleeping areas, and on other floors (including basements). Any alarm must be clearly audible in all bedrooms. Locate on plans per code.
- Battery-powered smoke detectors are ok in buildings that undergo alterations, repairs, or additions.

Emergency Escape and Rescue*Reference: VRC R310*

One window (or door) in the basement and in each bedroom must meet these requirements:

- 5.7 sq. ft. minimum net clear open area (grade floor openings may have a minimum net clear open area of 5 sq. ft.) construction and additions.
- 20" minimum clear open width
- 24" minimum clear open height
- 44" maximum sill height
- Window wells require minimum 3' x 3' but must permit window to fully open. Ladder escape is ok.

Skylights*Reference: VRC R308.6***Safety Glazing***Reference: VRC R308.4*

- Glazing in or adjacent to doors (24") and glazing close to the floor - see code for other hazardous locations.
- Glazing adjacent to stairs and stair landings

6. NATURAL LIGHT REQUIREMENTS*Reference: VRC R303*

- Window area for natural light must be 8 percent of floor area (exception for artificially lighted rooms).

7. VENTILATION REQUIREMENTS**Roof Ventilation***Reference: VRC R806*

- 1 sq. ft. of venting per 150 sq. ft. of area to be vented - this can be reduced to 1/300 if ventilators are provided in the upper portion of this area to be vented.
- 1" air space minimum required above roof insulation.
- Cross-ventilation required.

Crawl Space Ventilation*Reference: VRC R408*

- 1 sq. ft. of venting per 150 sq. ft. of under floor area.
- Cross-ventilation also required. (See also VRC R317.1 for crawl space clear heights, 18" minimum for joists, 12" minimum for wood girders not preservative treated).

Mechanical Ventilation/Exhaust Termination*Reference: VRC R303.3, R1502, R1503 and R1507*

- Exhaust air from bathroom fans, range hoods and clothes dryers shall exhaust directly outside.
- Kitchens and bathrooms must be vented mechanically per VRC Table M1507.3. See R303.3 for bathroom exception.

Room Dimension Requirements*Reference: VRC R304 and R305*

- General 7'0" minimum habitable space ceiling height.
- 7'0" minimum ceiling height in bathrooms, laundry rooms, basement and hallway.
- Sloped ceiling (min. 5'0") must meet minimum height over 50 percent of the required floor area. Minimum 6'8" height at bathroom fixtures.
- At least one habitable room not less than 120 sq. ft. all other rooms, not less than 70 sq. ft. (except kitchens)
- 7' minimum width for habitable room.

8. TOWNHOUSES

- VRC R302.2 - Townhouses shall be separated by two one-hour fire-resistive walls or a common two-hour fire-resistive wall that contains no plumbing or mechanical equipment.
- VRC R320 - Townhouse structures having four or more dwelling units are subject to accessibility provisions of Chapter 11 of the VCC.

9. TWO-FAMILY DWELLINGS/DUPLEXES

- VRC R302.3 - Dwelling separation by one-hour fire-resistive wall and/or floor-ceiling assemblies. If separation wall is on a lot line it shall be constructed as required in Section R302.2 for townhouses.

10. MISCELLANEOUS REQUIREMENTS**Attic Access**

Reference: VRC R807

- Opening to be 22" x 30" minimum.
- Attic headroom to be 30" at access.

Crawl Space Access

Reference: VRC R408.4

- Opening to be 24" x 18" minimum.

Fireblocking and Draftstops

Reference: VRC R302.11 and R302.12

- Fireblocking per R302.11
- Provide draftstopping in floor-ceiling assemblies so concealed space does not exceed 1,000 sq. ft.

Weather Protection

Reference: VRC R703, R903

- Exterior wall protection, flashing and deck protection (see: Chapter R905, Roofs)

Non-combustible Surface on Garage Floors

Reference: VRC R309.1

11. BUILDING CONSTRUCTION REQUIREMENTS**Foundation**

- 24" minimum frost depth. R403.1.3
- Backfill placement requirements. R404.1.7
- Foundation drainage. R405
- Foundation dampproofing. R406.1

Concrete

Reference: VRC Table R402.2

Soil Types

Reference: VRC Table R401.4.1 and City Soil Policy - 1 & 2 Family Dwelling Construction

- 1,500 psf assumed bearing, unless a soil evaluation report specifies otherwise.

Wood/Earth Separation

Reference: VRC R317.1

- Pressure-treated wood is required for wood in contact with concrete or wood close to earth per VRC R317.1. Wood in contact with the ground shall be rated "ground-contact".
- 6" minimum clearance between wood and earth.

Braced Wall Framing

Reference: VRC R602.10

Wall Stud Size

Reference: VRC Table R602.3(5)

- Size and spacing regulated per number of floors supported and clear height of stud.

Building Framing Connections

Reference: VRC R403.1.6, R502.9, R602.3(1)-(4), and R802.3.1.

- Sill plates and walls supported directly on continuous foundations shall be anchored to the foundation per VRC R403.1.6 provisions.
- Fastener Schedule for Structural Members - Table R602.3(1).

Masonry Fireplace and Chimneys

Reference: VRC R1001, R1003, R1006

Metal Fireplace and Chimneys

Reference: VRC R1004, R1005, R1006

Solid Fuel Burning Appliances

Reference: VRC N1102.4.3 and M1306

- Gasketed doors and outdoor combustion air.

12. ENERGY EFFICIENCY REQUIREMENTS

Reference: VRC Chapter 11, R402.2.9

- R-38 - minimum roof/ceiling insulation
- R-13 - minimum wall insulation
- R-19 - minimum floor insulation
- R-10 - minimum basement Insulation (continuous)
- R-13 - minimum basement Insulation (between studs)
- R-10 - minimum crawl space walls Insulation
crawl space vapor retarder required (Class I, 6 mil)
- R-10 - minimum slab-on-grade Insulation
Floor surface within 12" of grade? If yes, R-10
Heated slab: R-15 (embedded heating elements)
- U-0.35 - glazing in windows and doors
- U-0.60 - glazing in skylights

13. TRADE REQUIREMENTS

Review typically occurs under the building permit but requires separate permit prior to commencement of work.

Electrical

Reference: VRC Chapter 36 & R3902

- Grounding electrode system
- GFCI protection at bathroom & kitchen receptacles.
- AFCI protection at bedroom receptacles.

Fuel-Gas

Reference: VRC R2407.6

- Outdoor combustion air provided to outdoors.
- Appliances shall be listed and installed per manufacturer's specifications.

Mechanical

Reference: VRC R408.4 and M1401.3

- Appliances shall be listed and installed per manufacturer's specifications.
- Manual J calculations required to verify heating and cooling equipment size.

Plumbing

Reference: VRC R307, R702.4, P2708.3

- Minimum fixture clearances.
- Cement and tile backer on shower walls.
- Temperature limit valve on shower controls.
- Appliances shall be listed and installed per manufacturer's specifications.

14. OTHER REQUIREMENTS**Flood-Resistant Construction**

Reference: VRC R322

- Protection of mechanical and electrical systems.

Pools, Spas and Hot Tubs

Reference: VRC Chapter 42 and Appendix G

- 48" minimum height above grade barrier.

Sump Pumps

Reference: VRC 405 and Chapter 33

**ANY QUESTIONS REGARDING BUILDING CODE REQUIREMENTS OR PLAN
PREPARATION SHOULD BE DIRECTED TO (703) 746-4200**